



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

the characteristics of the old type of poliomyelitis—that is, comparatively few cases widely scattered, with a low mortality. This is in striking contrast to the characteristics of the epidemic as it is occurring in New York City and the surrounding States.

A SICKNESS SURVEY OF NORTH CAROLINA.

By LEE K. FRANKEL, Ph. D., Sixth Vice President, and LOUIS I. DUBLIN, Ph. D., Statistician, Metropolitan Life Insurance Co., New York.

The following report gives the results of the third of a series of sickness surveys in typical American communities. The first two, covering Rochester, N. Y., and Trenton, N. J., were summarized in the United States Public Health Reports of February 25, 1916.¹

The State of North Carolina was chosen for this study and offered important advantages. In the first place, the State includes rural as well as urban communities, while the constitution of the populations previously surveyed was more homogeneous. An opportunity was likewise afforded to compare the amount of sickness in the white race with that of the colored.

The plan and the scope of the present inquiry are not materially different from those of the previous study. As before, the data were secured by the agents of the company. The reader is referred to the Rochester Survey, page 3, for the form used and the instructions given. The questions originally asked covered sex, age, occupation, disease, duration of sickness, medical attendance, and extent of disability. In addition to this information the North Carolina agents were requested to record the color of the families canvassed and also to furnish the name of the physician attending the case of illness.

It was hoped that in this way it would be possible to confirm subsequently the diagnoses stated to the agents by families in which sickness occurred. The instructions to agents were carefully carried out, and have led to more complete returns than were possible in the previous investigation.

Altogether 14,112 families were canvassed, containing 66,007 persons. Of these 43,468 were white and 22,539 were colored. While the sample was only about 2½ per cent of the total population of North Carolina, it constituted a very much larger proportion of the counties in which the canvass was made. It is confidently believed that the proportion was sufficiently large to enable us to accept the results as a fair index of the amount of sickness occurring in the sections can-

¹ Community Sickness Survey, Rochester, N. Y., September, 1915. Frankel, Lee K., and Dublin, Louis I., Public Health Reports. U. S. Public Health Service, Washington. February 25, 1916. Pp. 423-438. (Also as Public Health Reprint 326.)

vassed, if not in the State as a whole. The following table gives the major results of the survey:

TABLE 1.—*Total number of persons canvassed, number and rate of sick persons, by region and district; North Carolina, April, 1916.*

Region.	Persons canvassed.	Sick persons.	
		Number.	Rate per 1,000 exposed.
Total State.....	66,007	1,881	28.5
Mountain counties.....	2,911	109	37.4
Asheville District.....	2,911	109	37.4
Middle upland counties.....	46,942	1,344	28.6
Charlotte District.....	8,274	224	27.1
Greensboro District.....	14,238	308	21.6
Salisbury District.....	5,930	194	32.7
Raleigh District.....	18,494	618	33.4
Coast counties.....	16,154	428	26.5
Pamlico (Washington) District.....	7,270	168	23.1
Wilmington District.....	8,884	260	29.3

There were 1,881 cases of illness among 66,007 persons canvassed, or a rate of 28.5 per 1,000 exposed at all ages. This means that nearly 3 per cent reported sick among the population reached. The figures compare unfavorably with those of Rochester, where the corresponding ratio was less than $2\frac{1}{2}$ per cent. The lowest rate in the three groups of North Carolina districts occurred in the coast counties, which were reached from the districts of Pamlico and Wilmington. These counties showed a morbidity rate of only 26.5 per 1,000. The middle upland counties, which included the districts of Charlotte, Greensboro, Salisbury, and Raleigh, gave a slightly higher rate, 28.6; the bulk of the material was in this area. The mountain counties, which were reached from the Asheville district, showed by far the highest rate, 37.4 per 1,000.

The survey was made during the week of April 17, 1916. During this week the temperature in Raleigh, which may be taken as an index for the State, ranged from 49° to 86°; the barometric pressure varied slightly above and below an average of 29.54 inches Hg. and the rainfall was 0.09 inch. The week as a whole was a favorable one for weather conditions. It should be remembered, also, that the month of April in North Carolina is one of the most healthful of the year, showing next to September the least number of deaths. Together these two conditions would indicate that the rates obtained are minimal as a measure of the amount of sickness occurring at all seasons in this State or, at any rate, that they are less than the average which may be expected for the entire year.

Extent of Disability.

The instructions to agents in the previous community surveys called for the recording of illness under three heads:

- (a) Persons who are up and about, but are unable to work because of sickness or accident.
- (b) Persons who are confined to bed at home because of sickness or accident.
- (c) Persons who are receiving treatment in hospitals or other institutions for the sick.

No provision was made for enumerating cases of sickness in which the patient was able to work. It was thought best not to introduce this item, lest it result in the recording of a large number of trivial illnesses, passing indispositions, imaginary diseases, etc. Yet in spite of this requirement, which was especially emphasized in the verbal instructions given, a considerable number of cases were reported where the sick were able to work. In the Rochester survey, for example, 8.8 per cent were so definitely specified; together with the 8.4 per cent whose ability to work was not specified, these constitute a total of 17.2 per cent. In the Trenton survey these two groups amounted to 22.8 per cent. In view of this fact and also because these illnesses, not involving disability, were in many cases ascribed to serious conditions, such as organic diseases of the heart, pulmonary tuberculosis, and Bright's disease, it seemed wise, in preparing for the North Carolina survey, not to give specific directions to exclude the cases of illness with ability to work. The instructions, however, again emphasized the importance of recording illnesses causing disability; it was these cases in which the survey was most interested. In spite of this fact the records show a condition almost identical with that of the two previous surveys; namely, that 10.2 per cent of the recorded illness stated specifically the ability to work, and 9.4 per cent in addition did not specify ability to work. Combining these two groups as before, we obtain 19.6 per cent, which we shall consider under the general head of "Able to work." It is realized that these cases are not as serious as the remainder, where the sick are specified under the required categories. The facts are given as returned, and if the reader is to make use of the material he should be mindful of its qualifications.

The following table presents the facts with reference to the extent of disability for the two sexes, first for both races and then for the two races separately:

TABLE 2.—*Sickness in North Carolina, week beginning Apr. 17, 1916, classified by extent of disability, by color, and by sex.*

Extent of disability; color.	Persons.		Males.		Females.	
	Number.	Per cent of total.	Number.	Per cent of total.	Number.	Per cent of total.
All persons, all classes.....	1,881	100.0	738	100.0	1,143	100.0
Unable to work.....	1,512	80.4	595	80.6	917	80.2
In bed at home.....	491	26.1	166	22.5	325	28.4
In bed in hospital.....	46	2.4	17	2.3	29	2.5
Up and about.....	975	51.8	412	55.8	563	49.3
Able to work.....	192	10.2	68	9.2	124	10.9
Ability to work not specified.....	177	9.4	75	10.2	102	8.9
White, all classes.....	1,243	100.0	510	100.0	733	100.0
Unable to work.....	983	79.1	405	79.4	578	78.8
In bed at home.....	319	25.7	108	21.2	211	28.8
In bed in hospital.....	33	2.6	12	2.3	21	2.8
Up and about.....	631	50.8	285	55.9	346	47.2
Able to work.....	138	11.1	55	10.8	83	11.4
Ability to work not specified.....	122	9.8	50	9.8	72	9.8
Colored, all classes.....	638	100.0	228	100.0	410	100.0
Unable to work.....	529	82.9	190	83.3	339	82.7
In bed at home.....	172	27.0	58	25.4	114	27.8
In bed in hospital.....	13	2.0	5	2.2	8	2.0
Up and about.....	344	53.9	127	55.7	217	52.9
Able to work.....	54	8.5	13	5.7	41	10.0
Ability to work not specified.....	55	8.6	25	11.0	30	7.3

Of the 1,881 cases of sickness, 1,512 or 80.4 per cent were unable to work. Under this head 28.5 per cent of the total were confined to bed and 51.8 per cent were up and about. The figures are very similar to those found in Rochester, where 27.6 per cent were confined to bed and 55.2 per cent were up and about. Only 2.4 per cent of all the cases were in hospitals. This contrasts strikingly with 10.7 per cent in Rochester and 14.4 per cent in Trenton and points perhaps to the limited hospital facilities of a large State which is for the most part rural in character.¹ No important distinctions in this respect appear in contrasting the two races or the two sexes.

Without distinction of color the two sexes show differences in the distribution of the figures as to character of disability, but these are not of great significance. Contrasting the facts for white and colored persons we find a larger proportion unable to work among the colored than among the white—82.9 per cent as against 79.1 per cent. It is curious that the figures for the colored rather than for the white of North Carolina approximate closely the figures for the preponderantly white population of Rochester.

¹ The United States Bureau of the Census report on benevolent institutions for the year 1910 registered 0.50 beds in hospitals and sanatoria per 1,000 of population in North Carolina. This figure may be compared with 3.93 per 1,000 per Trenton, N. J., and 4.32 per 1,000 per Rochester, N. Y., in the same year.

Sickness by Color, by Sex, and by Age Period.

We shall now examine the rates of sickness among white and colored persons in the two sexes and in the various age periods. The following table presents these data for white persons, indicating all cases of sickness including those involving inability to work.

TABLE 3.—*Number of cases, and rates per 1,000 exposed, among white persons by age and by sex—Total sick and sick unable to work.*

Sex, and age period.	Number of persons exposed.	Total sick persons.		Sick persons unable to work.	
		Number.	Rate per 1,000 exposed.	Number.	Rate per 1,000 exposed.
Males:					
All ages.....	20,340	510	25.1	405	19.9
Ages 15 and over.....	12,367	388	31.4	314	25.4
Under 15.....	7,973	122	15.3	11	11.4
15 to 24.....	4,238	67	15.8	57	13.4
25 to 34.....	3,143	71	22.6	55	17.5
35 to 44.....	2,135	60	28.1	49	23.0
45 to 54.....	1,473	63	42.8	49	33.3
55 to 64.....	1,013	71	70.1	55	54.3
65 and over.....	330	54	163.6	47	142.4
Unknown age.....	35	2	57.1	2	57.1
Females:					
All ages.....	22,468	733	32.6	578	25.7
Ages 15 and over.....	14,239	613	42.8	487	34.0
Under 15.....	8,129	120	14.8	91	11.2
15 to 24.....	5,288	131	24.8	103	19.5
25 to 34.....	3,546	130	36.7	103	29.0
35 to 44.....	2,398	132	55.0	100	41.7
45 to 54.....	1,718	101	58.8	82	47.7
55 to 64.....	1,013	76	75.0	64	63.2
65 and over.....	339	42	123.9	34	100.3
Unknown age.....	37	1	27.0	1	27.0
Unknown sex.....	660				

Without distinction of extent of disability, 25.1 white males and 32.6 white females were reported sick out of each thousand exposed. In Rochester the corresponding figures were only 21.4 and 24.8 respectively. Taking the figures for ages 15 and over, i. e., eliminating the children, for whom it is always difficult to obtain a precise statement of the facts of sickness, we have rates of 31.4 for males and 42.8 for females. These figures are likewise considerably higher than the corresponding figures for Rochester, i. e., 27.3 and 31.2 respectively.

Sickness involving disability, which is clearly the more important from an economic standpoint, occurred at the rate of 19.9 per thousand among males and 25.7 per thousand among females. Here again the differences are in favor of the population of Rochester, although these are not so marked as in the previous case, the corresponding figures for Rochester being 17.8 and 20.4 respectively. Eliminating the ages below 15, the population of North Carolina has 25.4 males and 34 females per thousand exposed who are so sick as to be unable to work. The latter figure is high, especially when contrasted with the rate for the city of Rochester, 25.7.

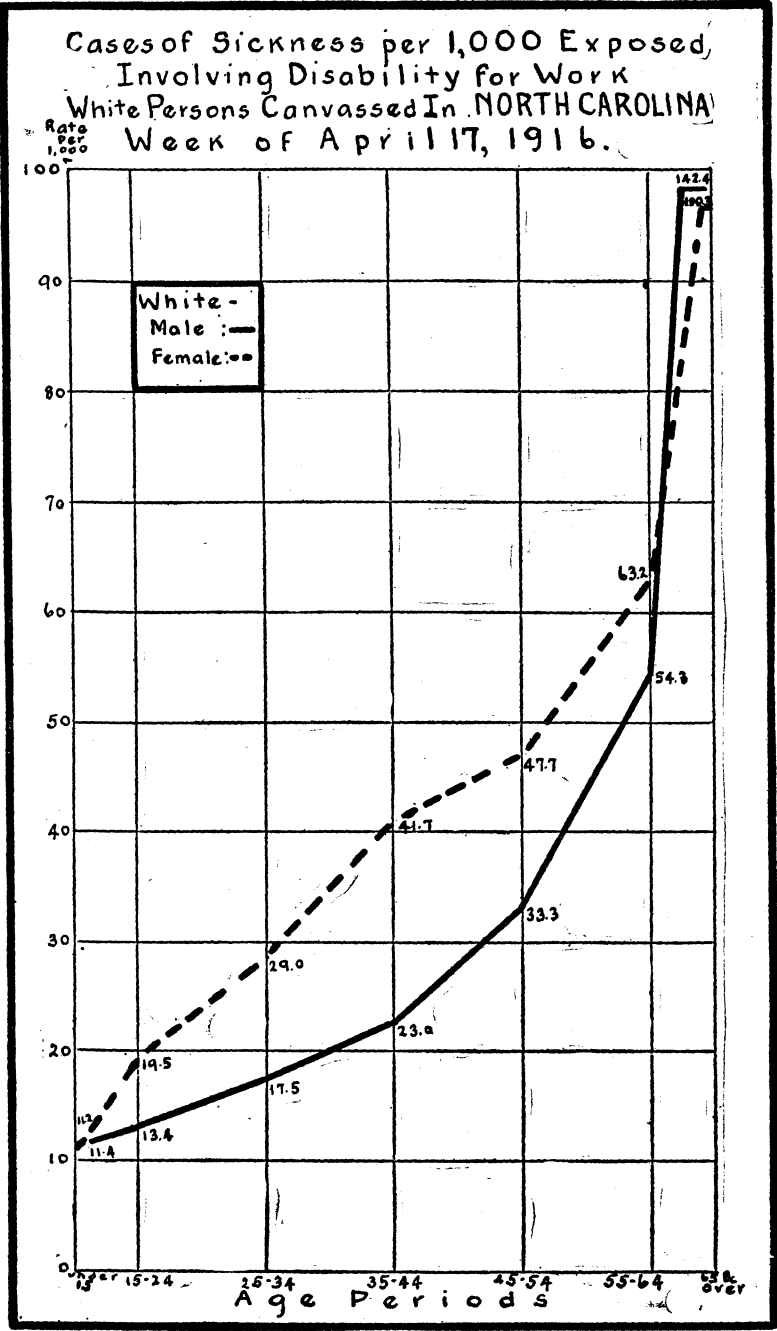
Graph 1 illustrates, for whites, the relation between age and the rate of sickness in each sex. It will be seen that from the first age class to the last the curve of morbidity rises uninterruptedly. Sickness with disability is slightly more prevalent among females than among males. From ages 15 to 64, however—that is, for the bulk of life—there is a marked excess of sickness among females. After 65 the rate is again higher among males. Attention should be directed to the regular character of the curve for the males. This is due in part to the large number of cases exposed and reflects also the care with which the data were collected by the enumerators. The curve for females is not quite so regular, but this fluctuation is generally found among females, where such disturbing elements as occupation and child-bearing affect the curve very definitely at certain age periods. A comparison of the curve with that of Rochester shows that the differences between the two sexes are much more striking in North Carolina.

The following table shows the corresponding facts for the colored population of North Carolina:

TABLE 4.—*Number of cases, and rates per 1,000 exposed, among colored persons by age and by sex—Total sick and sick unable to work.*

Sex and age period.	Number of persons exposed.	Total sick persons.		Sick persons unable to work.	
		Number.	Rate per 1,000 exposed.	Number.	Rate per 1,000 exposed.
Males:					
All ages.....	9,962	228	22.9	190	19.1
Ages 15 and over.....	6,428	186	28.9	158	24.6
Under 15.....	3,534	42	11.9	32	9.1
15 to 24.....	2,021	28	13.9	22	10.9
25 to 34.....	1,369	26	18.6	21	15.0
35 to 44.....	1,321	35	26.5	27	20.4
45 to 54.....	947	37	39.1	29	30.6
55 to 64.....	500	31	62.0	30	60.0
65 and over.....	219	27	128.6	27	128.6
Unknown age.....	30	2	66.7	2	66.7
Females:					
All ages.....	12,134	410	33.8	339	27.9
Ages 15 and over.....	8,331	381	45.7	315	37.8
Under 15.....	3,803	29	7.6	24	6.3
15 to 24.....	2,633	61	23.2	51	19.4
25 to 34.....	2,197	84	30.9	72	32.2
35 to 44.....	1,666	80	48.0	67	40.2
45 to 54.....	1,193	58	52.6	44	39.9
55 to 64.....	558	60	107.6	44	78.9
65 and over.....	229	35	159.1	34	154.5
Unknown age.....	44	3	68.2	3	68.2
Unknown sex.....	443				

Among the colored there were 22.9 males and 38.8 females reported sick per 1,000 exposed. For ages 15 and over the rates were 28.9 for males and 45.7 for females. The record of colored males is somewhat better than that of whites, while that of colored females is somewhat less favorable than that of white females.



Graph 1.

The same is true of the more significant form of morbidity, i. e., sickness involving disability to work. For all ages, colored males had a rate of 19.1 and colored females a rate of 27.9 from sickness incapacitating them for work. Eliminating the ages below 15, the figures were 24.6 for males and 37.8 for females.

Again, the curve for males is quite regular. With slight exceptions colored males show uniformly lower rates than white males for the corresponding ages. The curve for females shows an even greater accentuation of the characteristic irregularities that have already been referred to for white females. Of the four sex and color groups that have been considered, the colored females exhibit a rate which is lowest at the earlier ages and highest at the later ages. After the conclusion of the first age period, the rates for colored females are appreciably higher than for colored males, the differences being most marked in the child-bearing period of life.

The following table presents a comparison of the sickness involving disability, by race, without differentiation as to sex:

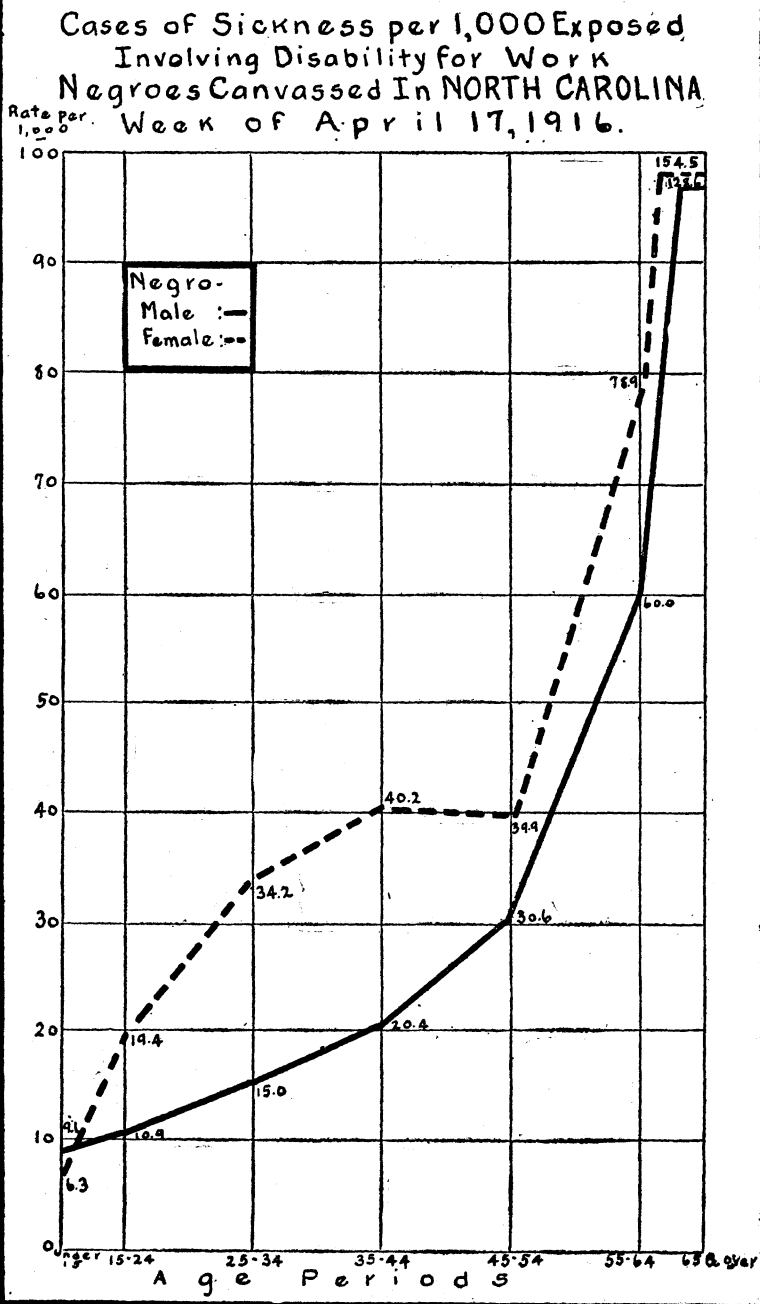
TABLE 5.—*Number of cases and rates per 1,000 exposed, by age and by color—Sick persons unable to work.*

Age period.	Whites.			Colored.		
	Number of persons exposed.	Total sick persons.		Number of persons exposed.	Total sick persons.	
		Number.	Rate per 1,000 exposed.		Number.	Rate per 1,000 exposed.
All ages.....	43,468	983	22.6	22,539	529	23.5
Ages 15 and over.....	27,316	801	29.3	15,197	473	31.1
Under 15.....	16,152	182	11.3	7,342	56	7.6
15 to 24.....	9,554	160	16.7	4,655	73	15.7
25 to 34.....	6,696	158	23.6	3,509	93	26.5
35 to 44.....	4,536	149	32.8	2,988	94	31.5
45 to 54.....	3,191	131	41.1	2,051	73	35.6
55 to 64.....	2,029	119	58.6	1,060	74	69.8
65 and over.....	669	81	121.1	430	61	141.9
Unknown age.....	641	3	4.7	504	5	9.9

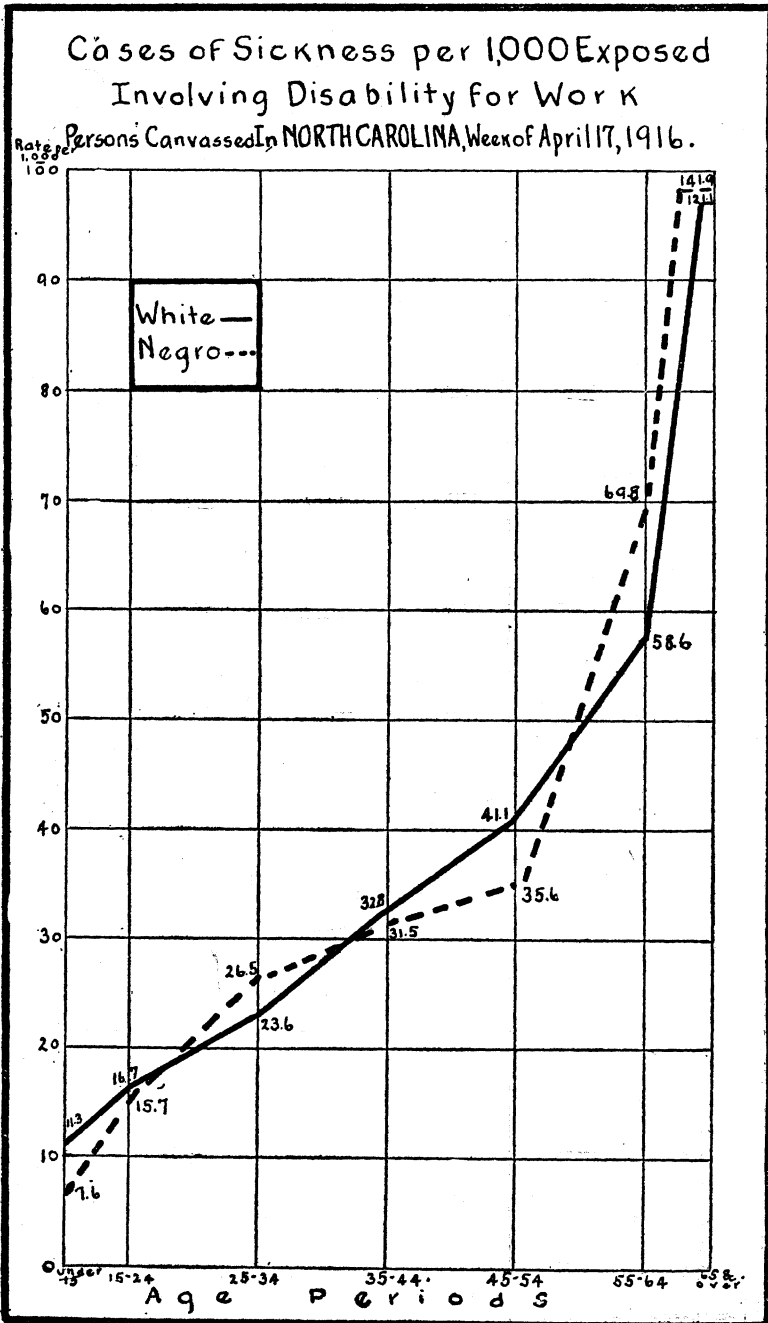
Graph 3 sets forth the curves constituted by the above figures.

Up to the conclusion of the age period 15 to 24 the whites have higher rates. At ages 25 to 34 the condition is reversed. In the two decades between ages 35 and 54 the colored rates are lower, but in the advanced ages that follow they are again higher. The rates for the two races, then, are decidedly at variance with each other; however, as a result of the irregularities of the colored female curve, the picture obtained is somewhat confused and exhibits no decided tendency.

The following table indicates the number in each race who were sick, with or without disability, for each of the more important diseases and conditions:



Graph 2.



Graph 3.

TABLE 6.—Sickness among 66,007 persons in North Carolina, week beginning Apr. 17, 1916, classified by disease or condition, by extent of disability, and by color.

Disease or condition.	All persons (66,007).						White (43,403).						Colored (22,539).					
	Persons sick and unable to work.			Persons sick but able to work.			Persons sick and unable to work.			Persons sick but able to work.			Persons sick and unable to work.			Persons sick but able to work.		
	Num-ber of cases.	Per-cent of total.	Cases per 100,000 ex-posed.	Num-ber of cases.	Per-cent of total.	Cases per 100,000 ex-posed.	Num-ber of cases.	Per-cent of total.	Cases per 100,000 ex-posed.	Num-ber of cases.	Per-cent of total.	Cases per 100,000 ex-posed.	Num-ber of cases.	Per-cent of total.	Cases per 100,000 ex-posed.	Num-ber of cases.	Per-cent of total.	Cases per 100,000 ex-posed.
All diseases and conditions.	1,512	100.0	2,290.7	369	100.0	559.0	933	100.0	2,261.4	260	100.0	598.1	529	100.0	2,347.0	109	100.0	483.6
General diseases.	567	37.5	859.0	129	35.0	195.5	394	39.9	906.2	95	36.7	218.5	173	32.9	767.6	34	31.0	150.8
Typhoid fever.....	20	1.3	30.3	9	2.4	13.6	14	1.4	32.2	7	2.7	16.1	6	1.1	26.6	.....	.....	.....
Malaria.....	67	4.4	101.5	1	0.3	1.5	59	6.0	135.7	1	0.3	2.3	8	1.5	35.5	2	1.8	8.9
Smallpox.....	24	1.6	36.1	6	1.6	9.1	27	2.9	50.6	5	1.9	11.5	2	0.4	8.9	.....	.....	.....
Scarlet fever.....	1	0.1	1.5	2	0.5	3.0	2	0.2	2.3	2	0.7	4.6	.....	.....	.....	1	0.9	4.4
Diphtheria and croup.....	28	1.9	42.4	8	2.2	12.1	20	2.0	46.0	8	3.1	18.4	8	1.5	35.5	.....	.....	.....
Influenza.....	125	8.3	189.4	25	6.8	37.9	69	7.0	158.7	18	6.9	41.4	56	10.6	248.5	7	6.4	31.1
Other epidemic diseases.....	18	1.2	27.3	5	1.4	7.6	13	1.3	29.9	4	1.5	9.2	2	0.4	22.2	1	0.9	4.4
Pellagra.....	24	1.6	36.4	15	4.1	22.7	22	2.2	50.8	14	5.4	32.2	2	0.4	8.9	1	0.9	4.4
Tuberculosis of the lungs.....	83	5.5	125.7	17	4.6	25.8	62	6.3	142.6	15	5.8	34.5	21	4.0	93.2	2	1.8	8.9
Other forms of tuberculosis.....	8	0.5	12.1	4	1.1	3.0	6	0.6	13.8	2	0.8	4.6	2	0.4	8.9	2	1.8	8.9
Cancer (all forms).....	8	0.5	12.1	2	0.5	3.0	4	0.4	9.2	1	0.4	2.3	4	0.8	17.7	1	0.9	4.4
Rheumatism (all forms).....	141	9.3	213.6	31	8.4	47.0	88	9.0	202.4	15	5.8	34.5	53	10.0	235.1	16	14.7	71.0
Other general diseases.....	14	0.9	21.2	4	1.1	6.1	11	1.1	25.3	3	1.2	6.9	3	0.6	13.3	1	0.9	4.4
Diseases of the nervous system and of organs of special sense.	189	12.6	286.3	32	8.8	48.5	113	11.5	259.9	16	6.2	36.8	76	14.3	337.2	16	14.8	70.9
Cerebral hemorrhage, apoplexy, and paralysis.....	77	5.1	116.7	8	2.2	12.1	32	3.3	73.6	5	1.9	11.5	45	8.5	199.7	3	2.8	13.3
Mental alienation (insanity).....	16	1.1	24.2	.....	.....	.....	10	1.0	23.0	.....	.....	.....	6	1.1	26.6	.....	.....	.....
Other diseases of the nervous system.....	86	5.7	130.3	19	5.2	28.8	67	6.8	154.1	10	3.9	23.0	19	3.6	84.3	9	8.3	39.9
Diseases of the eyes and their annexa.....	10	0.7	15.1	5	1.4	7.6	4	0.4	9.2	1	0.4	2.3	6	1.1	26.6	4	3.7	17.7

Diseases of the circulatory system.....	53	3.5	80.3	8	2.2	12.1	35	3.6	80.5	5	1.9	11.5	18	3.4	79.9	3	2.7	13.3
Organic diseases of the heart.....	41	2.7	62.1	7	1.9	10.6	26	2.7	59.8	5	1.9	11.5	15	2.8	66.6	2	1.8	8.9
Other diseases of the circulatory system.....	12	.8	18.2	1	.3	1.5	9	.9	20.7	.....	.....	.....	3	.6	13.3	1	.9	4.4
Diseases of the respiratory system.....	149	9.9	225.6	56	15.2	84.9	90	9.2	207.0	42	16.2	90.6	59	11.3	261.8	14	12.9	62.1
Colds.....	36	2.4	54.5	20	5.4	30.3	23	2.3	52.9	14	5.4	32.2	13	2.5	57.7	6	5.5	26.6
Pneumonia (all forms).....	63	4.2	95.4	5	1.4	7.6	31	3.2	71.3	2	.8	4.6	32	6.1	142.0	3	2.8	13.3
Other diseases of the respiratory system.....	50	3.3	75.7	31	8.4	47.0	36	3.7	82.8	26	10.0	59.8	14	2.7	62.1	5	4.6	22.2
Diseases of the digestive system.....	157	10.4	237.9	48	13.0	72.7	109	11.1	250.7	34	13.1	78.2	48	9.1	212.9	14	12.8	62.1
Diseases of the pharynx.....	19	1.3	28.8	6	1.6	9.1	13	1.3	29.9	5	1.9	11.5	6	1.1	26.6	1	.9	4.4
Diseases of the stomach.....	64	4.2	97.0	28	7.6	42.4	44	4.5	101.2	20	7.7	46.0	20	3.8	88.7	8	7.3	35.5
Appendicitis.....	23	1.5	34.8	3	.8	4.5	15	1.5	34.5	3	1.2	6.9	8	1.5	35.5	.....	.....	.....
Other diseases of the digestive system.....	51	3.4	77.3	11	3.0	16.7	37	3.8	85.1	6	2.3	13.8	14	2.7	62.1	5	4.6	22.2
Nonvenereal diseases of the genito-urinary system and annexa.....	80	5.3	121.2	24	6.5	36.4	47	4.7	108.1	14	5.4	32.2	33	6.2	146.4	10	9.2	44.4
Diseases of the kidneys and annexa.....	38	2.5	57.6	11	3.0	16.7	22	2.2	50.6	4	1.5	9.2	16	3.0	71.0	7	6.4	31.1
Other diseases of the genito-urinary system.....	42	2.8	63.6	13	3.5	19.7	25	2.5	57.5	10	3.9	23.0	17	3.2	75.4	3	2.8	13.3
The puerperal state.....	45	2.9	68.1	9	2.5	13.7	22	2.2	50.6	5	2.0	11.5	23	4.4	102.0	4	3.6	17.8
Pregnancy.....	2	.1	3.0	4	1.1	6.1	2	.2	4.6	2	.8	4.6	.....	.....	.....	2	1.8	8.9
Normal childbirth.....	40	2.6	60.6	5	1.4	7.6	20	2.0	46.0	3	1.2	6.9	20	3.8	88.7	2	1.8	8.9
Other diseases and conditions of the puerperal state.....	3	.2	4.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.6	13.3	.....	.....	.....
Diseases of the skin and cellular tissue.....	13	.9	19.7	8	2.2	12.1	11	1.1	25.3	7	2.7	16.1	2	.4	8.9	1	.9	4.4
Diseases of the bones and organs of locomotion.....	20	1.3	30.3	6	1.6	9.1	14	1.4	32.2	4	1.5	9.2	6	1.1	26.6	2	1.8	8.9
Malformations.....	2	.1	3.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.2	4.4	.....	.....	.....
Old age.....	31	2.1	47.0	4	1.1	6.1	15	1.5	34.5	4	1.5	9.2	16	3.0	71.0	.....	.....	.....
External causes.....	68	4.5	103.0	10	2.7	15.1	42	4.3	96.6	7	2.7	16.1	26	4.9	115.4	3	2.8	13.3
Ill-defined diseases.....	118	7.8	178.8	29	7.9	43.9	81	8.2	186.3	24	9.2	55.2	37	7.0	164.2	5	4.6	22.2
Permanent disabilities.....	20	1.3	30.3	6	1.6	9.1	9	.9	20.7	3	1.2	6.9	11	2.1	48.8	3	2.8	13.3

The returns for North Carolina differ in a number of important respects from those found in Rochester. The season of the year, the varying climatic and geographical conditions, and, most important, the different racial composition of the North Carolina population, have brought about a picture which is considerably at variance with the one previously obtained. It is interesting to note that the North Carolina population exhibits a higher rate of sickness with disability than the population of Rochester, as regards typhoid fever, pulmonary tuberculosis, cerebral hemorrhage, apoplexy and paralysis, and pneumonia. Malaria, a disease of no numerical importance in Rochester, constituted 4.4 per cent of all cases of sickness with disability in North Carolina, with a rate of 101.5 per hundred thousand exposed. The high influenza rate (189.4) is probably indicative of epidemic conditions in North Carolina at the time of the survey; this is significantly accompanied by a pneumonia rate of 95.4, in contrast to only 17.4 in Rochester (constituting 4.2 per cent of all cases as opposed to 0.9 per cent). "Colds" are also noteworthy in North Carolina (2.4 per cent), while they were negligible in Rochester. Pellagra was present to a significant extent in North Carolina, but it did not occur in Rochester. On the other hand, the North Carolina rates for cancer and for organic diseases of the heart are more favorable. It is probable that the figures for both pellagra and cancer are understatements, many cases of the former being concealed under the guise of "mental alienation" and "other diseases of the digestive system," while cases of the latter were probably returned as diseases of the digestive system, of the genitourinary system, and of other seats of the disease. Bronchitis and asthma, which were responsible for 31.9 and 46.4 cases per 100,000, respectively, in Rochester, did not occur in North Carolina in any considerable degree.

Rheumatism (all forms) is again the most important single condition, being responsible for 9.3 per cent of all cases and for a rate of 213.6 per 100,000; the rate in Rochester was 211.7. In the Federal census of sickness in 1890 it was likewise found that the various forms of rheumatism together constituted the largest single item in the list of diseases; at that time, however, the rate obtained was 432 per 100,000, or over twice that of our studies.

General diseases were, as a group, responsible for the largest share of the morbidity, accounting altogether for 859 cases per 100,000 exposed (37.5 per cent of all cases); diseases of the nervous system and of the organs of special sense came next, with a rate of 286.3 per 100,000 (12.6 per cent of the total morbidity). The relationship was exactly reversed in Rochester; diseases of the nervous system stood first, with a rate of 492.9 per 100,000 (25.7 per cent) and the general diseases came next with a rate of only 481.3 per 100,000

(25.1 per cent). Mental alienation (insanity) was responsible for only 1.1 per cent of the morbidity of North Carolina, in contrast to 3.8 per cent in Rochester. The lesser prominence of nervous diseases in North Carolina is perhaps the result of the mode of life in a State largely rural in character, in contrast with that of an industrial urban community like Rochester. Diseases of the digestive system are not materially different in their proportional frequency from the corresponding ratios in the two previous surveys, constituting about one-tenth of the total cases. The puerperal state presents a smaller proportion of cases than in Rochester; the same is true of external causes (accidents). Twenty cases in North Carolina were ascribable to "permanent disabilities" such as blindness.

If we differentiate according to race the cases of sickness involving disability, it appears that general diseases are more prominent in the white group (39.9 per cent) than among the colored (32.9 per cent). A few of the general diseases show higher percentages for the colored, however. Thus influenza constitutes 7 per cent of all cases in the group of the whites, as opposed to 10.6 per cent among the colored. With this is again to be associated the fact that, in the class of respiratory diseases, "colds" and pneumonia constitute only 2.3 and 3.2 per cent, respectively, of the morbidity of whites, in contrast to 2.5 and 6.1 per cent among the colored. The rates for the acute infectious diseases of children are characteristically low for negroes. Malaria accounts for 6 per cent of all cases in the white race, and for only 1.5 per cent among the colored. Tuberculosis of the lungs, it is surprising to note, is represented by a sickness rate of 142.6 per 100,000 among the whites, in contrast to only 93.2 per 100,000 among the colored (6.3 and 4 per cent, respectively, of all cases.) Cancer was found proportionally twice as prevalent among negroes in this survey as among whites.

The diseases of the nervous system and of the organs of special sense are represented by a larger proportion of cases among the colored (14.3 per cent) than among the white (11.5 per cent); the corresponding rates are 337.2 per 100,000 for the colored and 259.9 among the white. Cerebral hemorrhage, apoplexy and paralysis, mental alienation, and diseases of the eyes and their annexa are all commoner in the colored race enumerated in this survey; it is only the miscellaneous title, "other diseases of the nervous system" which shows a larger percentage (6.8 per cent) of cases among the white than among the colored (3.6 per cent). Diseases of the circulatory system are of about equal prevalence in the two races. As has already been pointed out, the diseases of the respiratory system are of proportionally greater frequency among the colored than among the whites, although here again the miscellaneous title, "other diseases of

the respiratory system," shows the opposite tendency. Diseases of the digestive system constitute slightly higher proportions of the morbidity of whites than of that of the colored. Nonvenereal diseases of the genitourinary system and annexa, on the other hand, show a slightly higher frequency for the colored (6.2 per cent) than for the whites (4.7 per cent). The puerperal state constitutes 2.2 per cent of the cases among whites, and exactly twice that proportion among the colored. External causes (accidents) account for a slightly larger proportion of cases among the colored (4.9 per cent) than among whites (4.3 per cent).

It has already been pointed out that of the 1,512 cases involving disability only 46 received hospital treatment. Of 83 cases of pulmonary tuberculosis only 3 were being cared for in hospitals; of 20 typhoid fever cases only 1 was receiving such treatment. Eleven out of 16 cases of mental alienation and 6 out of 23 cases of appendicitis were being cared for in hospitals. The remaining hospital cases represented a widely scattered list of diseases. Out of 63 cases of pneumonia not one was receiving hospital treatment.

Thus far we have concerned ourselves only with the sick who were unable to work. Without devoting much attention to the group of those able to work, we may nevertheless note with interest that the relationships are somewhat different from those obtaining in the other group. Among the cases not involving disability there is a greater proportionate incidence of diseases of the respiratory system and, in some degree, of these of the digestive and of the genitourinary systems. There is a corresponding reduction in the proportionate frequency of the other groups of diseases. These differences are more marked among the whites than among the colored. It is important to note the presence of 17 cases of pulmonary tuberculosis, 31 cases of rheumatism, 7 cases of heart disease, and 11 cases of kidney disease, which, while they indicate serious physical disturbance, nevertheless do not incapacitate the individual for work.

It is realized that the statements of disease made in the course of this survey are the result of an enumeration by a body of laymen (the insurance agents). The same merit is not therefore as readily accorded to them as would be given to the reports of physicians. To determine the accuracy with which these returns of disease were made, a group of over 100 physicians, whose names had been reported as attending a large proportion of the cases of sickness, were canvassed with the request that the individual diagnoses submitted by the families be confirmed or denied. It is a matter of considerable encouragement to the writers that in 207 replies from 102 physicians in the State, 131 enumerators' statements of diagnosis were confirmed, 4 reports were reversed, and 10 replies from physicians gave the names of diseases in place of the enumerators' statements of symp-

toms. In 62 cases, the physicians had lost track of the patients, had no record of the diseases treated, or the patients had simply given the physician's name as "family doctor" without having been under treatment. In the 145 cases where the physician did recall the case, only four instances of change in the enumerators' statements were indicated.

This confirms our previous impression that the method employed in these studies is essentially an acceptable one for the determination of the main facts of community sickness. Further confirmation of the validity of our returns is obtained from the following table, which presents the causes of sickness reported by the company's nurses visiting sick policyholders in the State of North Carolina during 1915:

TABLE 7.—*Number and percentage of cases visited in North Carolina during 1915 by visiting nurse service—Principal diseases and conditions.*

Disease or condition.	Number of cases.	Percentage of total.
All diseases and conditions.....	2, 130	100. 0
Typhoid fever.....	82	3. 8
Malaria.....	208	9. 8
Measles, scarlet fever, whooping cough, diphtheria, and croup.....	16	. 8
Influenza.....	208	9. 8
Pellagra.....	49	2. 3
Tuberculosis of the lungs.....	63	3. 0
Rheumatism (all forms).....	50	2. 3
Pneumonia (all forms).....	161	7. 6
Diseases of the digestive system.....	260	12. 2
Tonsillitis.....	39	1. 8
Diseases of the kidneys and annexa.....	43	2. 0
Puerperal state.....	255	12. 0
External causes.....	100	4. 7
All other diseases and conditions.....	595	27. 9

A number of factors are involved which prevent a close agreement between these figures and the proportionate representation of the several diseases in our sickness survey. The survey was made during a single week and was consequently subject to the influence of seasonal factors, whereas the nursing service report covers an entire year. Furthermore, the service dispensed by the company involves a certain element of selection, so that the acute diseases, as also the puerperal state, are inevitably more prominent than they would be in a general statement of morbidity. It is significant, nevertheless, to note that typhoid fever constitutes 3.8 per cent of the total in the nursing service figures and 1.3 per cent of the total determined by the survey; malaria is responsible for 9.8 per cent of the cases handled by the company's visiting nurse service, another confirmation and accentuation of the figures previously determined. Influenza (9.8 per cent) and pellagra (2.3 per cent) are significantly prominent. Pneumonia (7.6 per cent) is likewise high, in accordance with our survey findings.

Disease in Relation to Age.

The distribution of the cases of sickness by age has already been discussed in a previous section (see p. 2824). It may now be of interest to consider individual diseases as factors in the morbidity at the various ages. For this purpose we shall, for convenience, distinguish four age periods: First, the ages below 15, in which there are 313 cases of sickness; second, ages 15 to 34, with 598 cases; third, ages 35 to 54, with 566 cases; and, finally, ages 55 and over, with 396 cases. There were 8 cases in which the age of the sick person was unknown. Each of the four age periods is characterized by certain diseases which are of comparatively little prominence in the other age periods. The acute infectious diseases, such as measles, scarlet fever, whooping cough, and diphtheria, are found preponderantly in the first age period. Out of a total of 71 cases only 11 occurred after age 15. Typhoid fever shows a considerable proportion of cases in the first age period—8 out of 20. Similarly, 30 cases of pneumonia (largely broncho-pneumonia) out of a total of 68 occurred in this period.

The second age period, 15 to 34, is characterized by the presence of a large number of cases of tuberculosis—58 out of a total of 100. Thirty-one cases of malaria out of 76, and 19 cases of pellagra out of 39, also occurred during these years. There were 10 cases of mental alienation out of a total of 16, and 42 cases of influenza out of a total of 150. Among females, the puerperal state and its concomitants are chiefly represented in this age period.

The third age period, 35 to 54, includes almost all of the cases of cancer and the largest proportion of cases of rheumatism and influenza. External causes are heavily represented in this period, 25 out of the 78 cases occurring at this time. Cerebral hemorrhage, apoplexy and paralysis, and organic diseases of the heart are also represented strongly in this age period.

Rheumatism and influenza retain their prominence in the final age period—that is, 55 and over—but the bulk of the diseases in this period consists of the so-called degenerative diseases, such as cerebral hemorrhage, apoplexy and paralysis—48 out of a total of 85 cases. There are 18 cases of organic diseases of the heart out of a total of 48, and 16 cases of kidney disease out of a total of 49.

A number of conditions, such as colds, pneumonia, diseases of the stomach, and diseases of the nervous system, occur throughout life, without any marked concentration in a single age period.

The following table presents the principal facts in the distribution of the cases of sickness by disease and age period:

TABLE 8.—*Number of cases of principal diseases and conditions at specified age periods.*

Disease or condition.	Number of cases at specified age periods.					
	All ages.	Under 15.	15 to 34.	35 to 54.	55 and over.	Un-known.
All diseases and conditions.....	1,881	313	598	566	396	8
Typhoid fever.....	20	8	8	1	3	
Malaria.....	76	18	31	17	10	
Measles, scarlet fever, whooping cough, diphtheria.....	71	60	10		1	
Influenza.....	150	13	42	54	41	
Pellagra.....	39	3	19	12	5	
Tuberculosis of the lungs.....	100	3	58	30	9	
Cancer (all forms).....	10		1	8	1	
Rheumatism.....	172	3	30	70	69	
Cerebral hemorrhage, apoplexy, and paralysis.....	85	3	7	27	48	
Mental alienation.....	16		10	6		
Organic diseases of the heart.....	48	2	7	19	18	2
"Colds".....	56	24	13	13	3	3
Pneumonia (all forms).....	68	30	20	11	7	
Diseases of kidneys.....	49	1	11	20	16	1
Puerperal state.....	54		44	10		
External causes.....	78	14	23	25	16	

Duration of Sickness.

The following table shows the distribution of the total cases of sickness according to the duration of illness up to the date of inquiry :

TABLE 9.—*Number of cases of sickness at each duration period in North Carolina.*

Duration of sickness.	Number of cases in specified duration period.	Percentage of total known durations.
All durations.....	1,881	100.0
1 day.....	36	2.1
1 day to 1 week.....	228	13.4
1 to 2 weeks.....	187	10.8
2 to 3 weeks.....	139	8.2
3 weeks to 1 month.....	97	5.7
1 to 2 months.....	173	10.2
2 to 3 months.....	81	4.8
3 to 6 months.....	135	8.0
6 months to 1 year.....	121	7.1
1 to 3 years.....	257	15.1
3 years and over.....	244	14.4
Unspecified.....	183	

The 1,881 cases of sickness thus distributed showed slightly different characteristics than those recorded in the Rochester Survey. In North Carolina 2.1 per cent of the total cases with period of sickness specified had a duration of only one day; this compares with a figure of 1.1 per cent for the Rochester enumeration. The North Carolina returns showed 40.2 per cent of the total cases of sickness with durations less than one month as compared with a proportion of 22.6 per cent for the Rochester material. A similarly interesting fact is that

the North Carolina cases exhibited 63.2 per cent of the durations under six months; the Rochester finding for total sickness for the same duration period was 39.4 per cent. In each instance these percentages are based upon the total cases with specified duration.

The comparatively large proportion of cases of short durations is accounted for by the types of diseases observed; the North Carolina enumeration developed a preponderance of acute diseases. The following table gives the durations of the individual diseases and conditions resulting in disability for work:

TABLE 10.—*Diseases and conditions among sick and unable to work classified by duration of sickness and by sex.*

Disease or condition; sex.	All durations.	1 day.	Over 1 day and under 1 week.	1 week and under 2 weeks.	2 weeks and under 3 weeks.	3 weeks and under 1 month.	1 month and under 2 months.	2 months and under 3 months.	3 months and under 6 months.	6 months and under 1 year.	1 year and under 3 years.	3 years and over.	Not specified.
All diseases and conditions.....	1,512	32	201	153	124	84	155	73	118	95	204	163	110
Males.....	595	14	83	51	49	29	51	26	50	30	102	67	43
Females.....	917	18	118	102	75	55	104	47	68	65	102	96	67
Malaria.....	67	6	30	6	8	2	5	3	3	1	.....	.....	3
Males.....	23	2	13	2	2	.....	1	1	2	.....	.....	.....	.....
Females.....	44	4	17	4	6	2	4	2	1	1	.....	.....	3
Influenza.....	125	4	23	28	23	9	19	8	11	.....	.....	.....	.....
Males.....	44	2	6	8	11	4	5	5	3	.....	.....	.....	.....
Females.....	81	2	17	20	12	5	14	3	8	.....	.....	.....	.....
Pellagra.....	24	.....	.....	.....	.....	.....	.....	.....	2	5	14	2	1
Males.....	10	.....	.....	.....	.....	.....	.....	.....	1	1	7	.....	1
Females.....	14	.....	.....	.....	.....	.....	.....	.....	1	4	7	2	.....
Tuberculosis of the lungs.....	83	.....	.....	.....	.....	2	3	9	12	16	34	6	1
Males.....	32	.....	.....	.....	.....	1	1	2	6	4	15	3	.....
Females.....	51	.....	.....	.....	.....	1	2	7	6	12	19	3	1
Rheumatism.....	141	9	12	6	6	13	7	14	9	21	38	6	6
Males.....	50	3	2	2	2	2	3	8	2	13	11	2	2
Females.....	91	6	10	4	4	11	4	6	7	8	27	4	4
Cerebral hemorrhage, apoplexy, and paralysis.....	77	.....	.....	.....	1	3	3	2	11	7	25	21	4
Males.....	39	.....	.....	.....	1	2	1	1	5	.....	16	12	1
Females.....	38	.....	.....	.....	.....	1	2	1	6	7	9	9	3
Organic diseases of heart.....	41	3	.....	4	4	3	1	5	6	8	6	1	.....
Males.....	17	1	.....	1	.....	.....	1	3	3	6	2	.....	.....
Females.....	24	2	.....	3	4	3	.....	2	3	2	4	.....	1
Pneumonia (all forms).....	63	1	8	10	10	8	12	8	2	1	.....	.....	3
Males.....	32	1	5	6	6	1	9	2	1	.....	.....	.....	1
Females.....	31	.....	3	4	4	7	3	6	1	1	.....	.....	2
Diseases of the stomach.....	64	4	5	8	7	4	6	1	4	6	10	6	3
Males.....	22	2	3	3	2	1	1	.....	1	2	6	1	.....
Females.....	42	2	2	5	5	3	5	1	3	4	4	5	3
Bright's disease and other diseases of kidneys.....	38	.....	2	1	5	.....	3	2	5	5	8	5	2
Males.....	20	.....	.....	1	.....	.....	1	2	1	4	6	3	1
Females.....	18	.....	2	.....	4	.....	2	.....	4	1	2	2	1
All other diseases and conditions.....	789	17	121	88	60	46	88	32	49	39	84	79	86
Males.....	306	7	52	29	23	18	30	9	19	14	33	35	37
Females.....	483	10	69	59	37	28	58	23	30	25	51	44	49

The duration of the illness was specified in 1,402 cases out of a total of 1,512 who were sick and unable to work. The individual diseases and conditions responsible for this disability varied considerably in the distribution of their durations. Over one-half of the malaria cases, for example, had a duration less than one week, while one-fifth of the influenza cases had a similarly short duration. Pneumonia cases were found well under one month in duration for most of the cases. Pellagra, tuberculosis of the lungs, rheumatism, cerebral hemorrhage, apoplexy and paralysis, organic diseases of the heart, all showed most of their cases in duration periods more than six months and even over one year.

It was possible also to compute average durations of illness per case in a number of diseases. For malaria there was an average of 18.2 days per case, for influenza 25.1 days per case, and for pneumonia 28.7 days per case. For the chronic diseases like pellagra, tuberculosis of the lungs, rheumatism, organic diseases of the heart, and diseases of the kidneys, the facts are not quite so clear and it has been more difficult to calculate the average durations. In these conditions the returns often gave such broad statements of durations as "two years," "four years," etc. Such statements represent, perhaps, the best recollection of the patient or the members of the family and must be taken as such. For the acute diseases, however, the average duration is probably as accurately stated as the practical purposes of this study demand. It is to be understood, moreover, that the durations of sickness as given cover only the period to the date of the inquiry and are, therefore, not completed durations. For those diseases which are represented in considerable numbers, as, for example, influenza, pneumonia, etc., the average completed durations per case are probably twice the periods quoted above.

A tabulation was prepared also for the group of persons sick but able to work. These facts are presented in the following table:

TABLE 11.—*Diseases and conditions among sick but able to work, classified by duration of sickness and by sex.*

Disease or condition; sex.	Number of persons sick for specified duration periods.											
	All durations.	1 day.	Over 1 day, under 1 week.	1 week and under 2 weeks.	2 weeks and under 3 weeks.	3 weeks and under 1 month.	1 month and under 2 months.	2 months and under 3 months.	3 months and under 6 months.	6 months and under 1 year.	1 year and under 3 years.	3 years and over.
All diseases and conditions.....	369	4	27	34	15	13	18	8	17	26	53	81
Males.....	143	1	9	10	4	5	5	1	6	8	20	36
Females.....	226	3	18	24	11	8	13	7	11	18	33	45
Malaria.....	9	1	4	1	1	1	1	1	1	1	1	1
Males.....	4	1	1	1	1	1	1	1	1	1	1	1
Females.....	5	1	3	1	1	1	1	1	1	1	1	1
Influenza.....	25	1	6	6	4	1	5	1	2	1	1	1
Males.....	5	1	3	1	1	1	1	1	1	1	1	1
Females.....	20	1	3	6	3	1	4	1	1	1	1	1
Pellagra.....	15	1	3	3	3	1	1	1	1	4	9	1
Males.....	3	1	1	1	1	1	1	1	1	1	1	1
Females.....	12	1	2	2	2	1	1	1	1	3	8	1
Tuberculosis of the lungs.....	17	1	1	1	1	1	1	1	1	2	7	2
Males.....	7	1	1	1	1	1	1	1	1	1	3	1
Females.....	10	1	1	1	1	1	1	1	1	1	4	1
Rheumatism.....	31	1	1	1	1	3	1	1	1	1	9	11
Males.....	9	1	1	1	1	1	1	1	1	1	3	3
Females.....	22	1	1	1	1	2	1	1	1	1	6	8
Cerebral hemorrhage; apoplexy and paralysis.....	8	1	1	1	1	1	1	1	1	1	3	3
Males.....	4	1	1	1	1	1	1	1	1	1	3	3
Females.....	4	1	1	1	1	1	1	1	1	1	1	1
Organic diseases of the heart.....	7	1	1	1	1	1	1	1	1	1	2	1
Males.....	4	1	1	1	1	1	1	1	1	1	1	1
Females.....	3	1	1	1	1	1	1	1	1	1	1	1
Pneumonia (all forms).....	5	1	1	1	1	1	1	1	1	1	1	1
Males.....	2	1	1	1	1	1	1	1	1	1	1	1
Females.....	3	1	1	1	1	1	1	1	1	1	1	1
Diseases of the stomach.....	28	1	1	2	1	1	1	2	2	2	6	5
Males.....	10	1	1	1	1	1	1	1	1	1	2	2
Females.....	18	1	1	1	1	1	1	1	1	1	4	3
Bright's disease and other diseases of kidneys.....	11	1	1	1	1	1	1	1	1	1	2	2
Males.....	6	1	1	1	1	1	1	1	1	1	2	1
Females.....	5	1	1	1	1	1	1	1	1	1	1	1
All other diseases and conditions.....	213	2	17	20	10	11	7	4	8	13	16	51
Males.....	89	1	6	9	2	3	5	3	3	3	7	24
Females.....	124	2	11	11	8	8	2	1	5	10	9	27

The 369 cases were for the most part chronic in nature as will be seen by reference to the table. Only malaria and influenza figure in any significant regard in the returns for durations less than one month.

Attendance of Physician.

The amount and character of medical attendance upon sickness is often one of the best indexes of the health standards of a community. In North Carolina out of 1,881 cases, 1,156 or 61.5 per cent had a physician in attendance. Cases among the white race showed a higher proportion of medical attendance upon sickness, namely, 63.6 per cent; the figure for the colored race enumerated was 57.4 per cent.

Persons who were sick and unable to work had a much higher proportion of cases with physician in attendance, 65.7 per cent as

compared with 44.2 per cent for the group of sick persons able to work. The proportions of cases with physician in attendance among white lives approximates the figures developed in our Rochester survey. In a measure, this close correspondence is another evidence of the essential accuracy of the two surveys.

The proportions of cases with physician in attendance vary with particular diseases. Among the sick who are unable to work, rheumatism among white persons shows a proportion of only 50 per cent of the cases with physician in attendance. Pneumonia among white persons shows a record of physician in attendance in 90.3 per cent of the cases. In general the acute diseases seem to have the higher proportions of cases with physician in attendance and the chronic conditions such as tuberculosis of the lungs, rheumatism, cerebral hemorrhage, apoplexy and paralysis, and diseases of the stomach, the lesser figures.

TABLE 12.—Cases attended by physician or treated in institution, classified by extent of disability for selected diseases.

Extent of disability and color.	Total cases.	Cases with physician in attendance.	Per cent physician in attendance.
TOTAL SICK PERSONS.			
All diseases (total).....	1,881	1,156	61.5
White.....	1,243	790	63.6
Colored.....	638	366	57.4
UNABLE TO WORK.			
All diseases (total).....	1,512	993	65.7
White.....	983	659	67.0
Colored.....	529	334	63.1
Typhoid fever:			
White.....	14	10	71.4
Colored.....	6	5	83.3
Malaria:			
White.....	59	32	54.2
Colored.....	8	6	75.0
Influenza:			
White.....	69	43	62.3
Colored.....	56	38	67.9
Pellagra:			
White.....	22	17	77.3
Colored.....	2	2	100.0
Tuberculosis of the lungs:			
White.....	62	53	85.5
Colored.....	21	15	71.4
Rheumatism:			
White.....	88	44	50.0
Colored.....	53	30	56.6
Cerebral hemorrhage, apoplexy, and paralysis:			
White.....	32	17	53.1
Colored.....	45	15	33.3
Organic diseases of the heart:			
White.....	26	23	88.5
Colored.....	15	15	100.0
Pneumonia (all forms):			
White.....	31	28	90.3
Colored.....	32	31	96.9
Diseases of the stomach:			
White.....	44	25	56.8
Colored.....	20	14	70.0

TABLE 12.—*Cases attended by physician or treated in institution, classified by extent of disability for selected diseases—Continued.*

Extent of disability and color.	Total cases.	Cases with physician in attendance.	Per cent physician in attendance.
UNABLE TO WORK—continued.			
Diseases of the kidneys and annexa:			
White.....	22	16	72.7
Colored.....	16	13	81.3
All other diseases and conditions:			
White.....	514	351	68.3
Colored.....	255	150	58.8
ABLE TO WORK.			
All diseases (total).....	369	163	44.2
White.....	260	131	50.4
Colored.....	109	32	29.4
Malaria:			
White.....	7	2	28.6
Colored.....	2	0	0.0
Influenza:			
White.....	18	9	50.0
Colored.....	7	5	71.4
Pellagra:			
White.....	14	9	64.3
Colored.....	1	0	0.0
Tuberculosis of the lungs:			
White.....	15	8	53.3
Colored.....	2	1	50.0
Rheumatism:			
White.....	15	7	46.7
Colored.....	16	4	25.0
Diseases of the stomach:			
White.....	20	15	75.0
Colored.....	8	2	25.0
All other diseases and conditions:			
White.....	171	81	47.4
Colored.....	73	20	27.4

Sickness in Relation to Occupation.

The plans for the sickness survey in North Carolina provided for an enumeration of both the well and the sick by occupation. It was hoped, in this way, to secure statistics which would throw light on the relation between occupation and the sickness rate. In the survey of Rochester, no dependable tabulations could be made under this head, because of the large number of occupations represented in the exposure and the small number of persons sick in each occupation class. The resulting sickness rates would have been without significance. The North Carolina survey, on the other hand, disclosed the fact that a large number of persons of both sexes were engaged in textile manufacture, principally in the cotton mills. In all there were 9,244 persons so employed. This group was of sufficient numerical importance to justify a further subdivision of the data on the basis of color, sex, and age period.

Among this group of textile workers 216 persons were reported sick. In the classification of these sick persons no distinction was made between those able and those not able to work. The total sick-

nesses at all ages were represented by a rate of 23.4 per 1,000 exposed—a proportion lower than that found in the survey taken as a whole. The white males and white females among textile workers also showed rates which were considerably lower than those occurring in the general group for the entire State; this applied not only to all ages taken together, but also to most of the age periods separately considered. Colored males and females employed in the textile industry in North Carolina were very few in number—144 and 84, respectively. The number of cases of sickness in this group was correspondingly small.

The following table gives the results of the sickness inquiry among white textile workers:

TABLE 13.—*Cases of sickness among white textile workers and rates per 1,000 exposed, by age and by sex.*

Age period.	White males.			White females.		
	Number exposed.	Number sick.	Rate per 1,000.	Number exposed.	Number sick.	Rate per 1,000.
All ages	5,238	112	21.4	3,778	95	25.1
Under 15.....	398	4	10.1	398	6	15.1
15 and over.....	4,840	108	22.3	3,380	89	26.3
15 to 24.....	2,135	25	11.7	2,312	56	24.2
25 to 34.....	1,246	29	23.3	663	19	28.7
35 to 44.....	701	15	21.4	265	11	41.5
45 to 54.....	433	13	30.0	89	2	22.5
55 to 64.....	261	20	76.6	45	1	22.2
65 and over.....	64	6	93.8	6	.....	.....

It may be posited, therefore, that no untoward conditions of sickness prevail in this industry as compared with the general group of the industrial classes enumerated in this survey.

Economic Loss from Sickness in North Carolina.

We have previously observed that the sickness rates determined by this survey are reasonably minimal. The mortality of April, next to that of September, is the most favorable for any month in the year. The rates of disability derived from the survey, when applied to the computation of sickness losses in the entire State, will therefore produce conservative figures. The white male population of North Carolina, at ages 15 and over, is estimated at 492,585 for the year 1916. On the hypothesis that the sickness rates of the survey remain constant throughout the year, we may assume that, at any time, at least 12,512 white males are sick. This means approximately 3,753,600 days of disability from work for this group of the population, using 300 working days per year for each individual as a basis of calculation. Similarly we may assume that there are 16,835 white females constantly sick throughout the year for a total period of 5,050,500 days of disability from pursuit of the daily

occupations of life. Among colored males our estimate is 1,561,200 days of disability for 5,204 persons constantly sick, and for colored females a total period of disability of 2,607,900 days for 8,693 persons. No monetary estimates of disability need be computed to emphasize this enormous loss of working time in the productive years of life. Whatever the financial estimate based upon wage loss, we have still to consider the cost of medical attendance, nursing care, and drugs, and the far-reaching effects of sickness in impairing the living and working efficiency of the families affected by the disability of one or more members.

Conclusion.

Again the evidence points favorably to our method of measuring the amount and kind of sickness prevailing in typical American communities. A little over 3 per cent of the population reached in North Carolina, at ages 15 and over, are constantly sick, and in 80.4 per cent the illness is serious enough to render them unable to work. This figure is somewhat higher than that found in Rochester, but not materially so. It is also higher than that reported by Billings in the Eleventh Census study (pp. 474 to 480, vol. 20, pt. 1, 1890) for a group of 12 Northeastern and Southern States; but, considering the different geographical areas covered and the changes that have occurred since 1890, the degree of correspondence between the two sets of figures may be considered as encouraging rather than otherwise. The internal evidence of the reliability of our figures, however, is the most striking. We have seen clearly the regular increase in the rate of sickness with age, as also the increased amount of sickness among females. Finally on the basis of the sickness rate (with disability) for ages 15 and over, we obtain the very interesting deduction that the average number of days of disability per annum, per capita of population, is 7.6 days for white males and 10.2 for white females. The corresponding figures for the colored race are 7.4 days for males and 11.3 for females. These results are in very close agreement with the best data available from official sources, both American and European, as to the number of days of disability per person of working age. The latest German figures covering the year 1913 give 8.8 days for males and 9.8 days for females insured in the sickness societies of that country.¹ We may, therefore, conclude with reasonable certainty that from sickness of from 2½ to 3 per cent of the community at the working ages are constantly sick, involving a loss of about 9 working days per person per year in the entire population. This, we believe, is a safe measure of the loss to the community from this source.

¹ Kaiserliches Statistisches Amt. Die Krankenversicherung im Jahre 1913. Statistik des Deutschen Reichs, Band 277. Berlin, 1915. p. 60.